

0321.68812

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Michael J. Sailor
Serial No.:	10/589,741
Conf. No.:	9856
Filed:	8/16/2006
For:	OPTICALLY ENCODED PARTICLES WITH GREY SCALE SPECTRA
Art Unit:	2876
Examiner:	Michael S. Andler

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**DECLARATION OF PRIOR INVENTION TO OVERCOME**  
**SAILOR U.S. PUBLISHED APPLICATION WO 2003/067231 (37 C.F.R. §1.131)**

PURPOSE OF DECLARATION

This Declaration is to establish completion of the invention as claimed in at least claim 18 of this application in the United States at a date prior to August 14, 2003, which is the date of publication of WO 2003/067231. The person making this Declaration is an inventor.

## DECLARATION

1. I am a named inventor in the present patent application, and have personal knowledge of the facts stated herein.

2. I am Professor of Chemistry and Biochemistry and Bioengineering at the University of California, San Diego. I hold a B.S. degree in Chemistry from Harvey Mudd College, and M.S. and Ph.D. degrees in Chemistry from Northwestern University.

3. The invention as claimed in at least claim 18 was completed before August 14, 2003.

4. The invention claimed in the present application in at least claim 18 was completed and conducted in experiments that produced grey scale photonic particles prior to August 14, 2003.

5. Specifically, the present application describes experiments on pages 6-7 with the following paragraph "Experiments were conducted to demonstrate the invention. Grey scale samples were prepared by anodically etching p++ type, B-dope, (100) oriented silicon with <1mOhm-cm resistivity in a solution of 3:1 HF (48%, aq)/ethanol by volume. Computer generated anodic current waveforms consistent with the above explanations for grey scale coding were applied and a platinum mesh electrode was used as the counter electrode. Results were consistent with expectations." These experiments were completed on July 9, 2003. An excerpt from the invention disclosure that my co-inventor, Shawn Meade, and I signed on August 14, 2003 indicating the

reduction to practice by July 9, 2003 is shown below.

EVENTS	DATE	INDICATE THE WRITTEN RECORD (e.g., notebook, letter, email), IF ORAL DISCUSSURE, INDICATE TO WHOM.
1. Initial conception of the idea	8/16/03	Notebook #1 of Sharon Mays
2. First description of complete invention, oral or written	8/29/03	Notebook #1 of Sharon Mays
3. First successful demonstration (first actual reduction to practice)	7/09/03	Notebook #1 of Sharon Mays
4. Has this work been: a. submitted for publication? N b. accepted for publication? N c. Published? N		
5. Have you presented this work at a conference or meeting? a. Did you submit an abstract? N b. Was abstract published? N c. Name of conference or meeting? N d. Did presentation include handouts? N		

#### G. INVENTORS' SIGNATURES

By signature below, I acknowledge my responsibilities and rights to jointly sharing under the current University of California Patent Policy.

Sharon Mays 8/14/03  
Inventor signature Date

[Signature] 8/14/03  
Inventor signature Date

\_\_\_\_\_  
Inventor signature Date

#### H. WITNESS - invention disclosed to and understood by:

[Signature] 8/14/03  
Witness signature Date

Haghar Lin  
Print witness name

6. The following data was taken from the reduction to practice that was completed on July 9, 2003 for samples with two spectral line radiometric grey scale coding.

$$f = 0.57 \mu\text{m} / (279000) \text{ } 80^\circ 22' \mu\text{m}$$

$$A_{1\text{max}} = 0.080$$

$$A_{2\text{max}} = 0.040$$

$$A_{\text{rms}} = 0.035$$

$$\lambda_1 = 1.0$$

$$\lambda_2 = 0.50$$

$$A_1 = (A_{1\text{max}} - A_{1\text{min}})2$$

$$A_2 = (A_{2\text{max}} - A_{2\text{min}})2$$

$$y_1 = A_1 * [\sin(\lambda_1 * f) + 1.5 * y_2] + 1/2 * A_{1\text{max}}$$

$$y_2 = A_2 * [\sin(\lambda_2 * f) + 1.5 * y_1] + 1/2 * A_{2\text{max}}$$

$$y = y_1 + y_22$$

$$\text{figure}(1)$$

$$\text{subplot}(1,2,1)$$

$$\text{plot}(f,y)$$

$$\text{hold on}$$

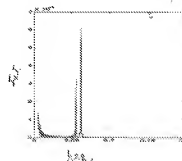
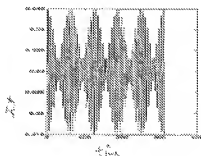
$$y = \text{fft}(y,2000000);$$

$$\text{Pyy} = 0.0001 * \text{yy} * \text{conj}(\text{yy}) / 2000000;$$

$$f = 1200 * (1 + 250) / 2000000;$$

$$\text{subplot}(1,2,2)$$

$$\text{plot}(f,\text{Pyy}(1:2,251))$$



Sample	ref	A1max	A2max	L1	L2	IR	IR	A1/A2	IRR	1.5A2
WIS 14	122	45	45	572.6	514.88	2484	2838	1	0.57	0.953169
WIS 17	125	45	45	569.83	508.75	2247	2838	1.165		0.934887
WIS 18	123	45	45	542.18	523.91	2252	2838	1.2847		0.934886
WIS 19	124	45	45	492.35	362.67	2158	2838	1.58		0.84217
WIS 19	128	55	45	502.01	504.80	3425	2838	1.25	1.55	0.831882
WIS 19	127	65	45	520.68	524.88	3420	2838	1.27	1.38	0.930072
WIS 20	128	60	45	518.51	522.22	3492	2838	2	1.64	0.931967

7. The following data was taken from the reduction to practice that was completed on July 9, 2003 for samples with ten spectral line ratiometric grey scale coding.

```
Standardized Sine components
y1 = A1 * [sin(2*pi * 1 + 360*pi) + 1] = A1sin(1);
y2 = A2 * [sin(2*pi * 2 + 360*pi) + 1] = A2sin(2);
y3 = A3 * [sin(2*pi * 3 + 360*pi) + 1] = A3sin(3);
y4 = A4 * [sin(2*pi * 4 + 360*pi) + 1] = A4sin(4);
y5 = A5 * [sin(2*pi * 5 + 360*pi) + 1] = A5sin(5);
y6 = A6 * [sin(2*pi * 6 + 360*pi) + 1] = A6sin(6);
y7 = A7 * [sin(2*pi * 7 + 360*pi) + 1] = A7sin(7);
y8 = A8 * [sin(2*pi * 8 + 360*pi) + 1] = A8sin(8);
y9 = A9 * [sin(2*pi * 9 + 360*pi) + 1] = A9sin(9);
y10 = A10 * [sin(2*pi * 10 + 360*pi) + 1] = A10sin(10);

% Composite Waveforms (Average of all sine components)
y = (y1 + y2 + y3 + y4 + y5 + y6 + y7 + y8 + y9 + y10)/10;

figure(2)
plot(y);

% For Saving: Plot and generate 1D column vector text file
root = 'data';
fid = fopen([root '.txt'], 'w');
for i = 1:length(y)
    fprintf(fid, '%6.4f\n', y(i));
end
fclose(fid);

% FFT
NFFT = 2000000;
Fyy = 0.00001*(1/NFFT) * conj(Y) / 2000000;
f = 1000*(1/NFFT) / 2000000;
figure(2)
stem(f, Fyy(1:20001));
```

#### Ten Spectral Line Waveform Parameters

Amplitude (line level)

below:

Amplitude = 0.02

1, 2 to 1, 10 to 2.2 to 1.0, respectively, with 0.1 spacing

phase offset = 3.14 pi

Line	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	Amplitude
1	0.0200	0.0199	0.0198	0.0197	0.0196	0.0195	0.0194	0.0193	0.0192	0.0191	0.0190
2	0.0199	0.0198	0.0197	0.0196	0.0195	0.0194	0.0193	0.0192	0.0191	0.0190	0.0189
3	0.0198	0.0197	0.0196	0.0195	0.0194	0.0193	0.0192	0.0191	0.0190	0.0189	0.0188
4	0.0197	0.0196	0.0195	0.0194	0.0193	0.0192	0.0191	0.0190	0.0189	0.0188	0.0187
5	0.0196	0.0195	0.0194	0.0193	0.0192	0.0191	0.0190	0.0189	0.0188	0.0187	0.0186
6	0.0195	0.0194	0.0193	0.0192	0.0191	0.0190	0.0189	0.0188	0.0187	0.0186	0.0185
7	0.0194	0.0193	0.0192	0.0191	0.0190	0.0189	0.0188	0.0187	0.0186	0.0185	0.0184
8	0.0193	0.0192	0.0191	0.0190	0.0189	0.0188	0.0187	0.0186	0.0185	0.0184	0.0183
9	0.0192	0.0191	0.0190	0.0189	0.0188	0.0187	0.0186	0.0185	0.0184	0.0183	0.0182
10	0.0191	0.0190	0.0189	0.0188	0.0187	0.0186	0.0185	0.0184	0.0183	0.0182	0.0181

8. As a person signing below, I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under 18 U.S.C. §1001, and that such willful statements may jeopardize the validity of this application or any patent issued thereon.

Declarant's Signature:



Date:

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Friday, January 7, 2011

Citizenship:

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